Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
International Bureau Seeks Comment on Recommendations Approved by World Radiocommunication Conference Advisory Committee	)	IB Docket No. 16-185

COMMENTS OF ERICSSON

Ericsson submits these comments in response to the Public Notice in the above-referenced proceeding,[1] which seeks comment on the draft recommendations provided by the World Radiocommunication Conference Advisory Committee (WRC-19 Advisory Committee or WAC).

I. INTRODUCTION AND SUMMARY.

Ericsson commends the Commission and the work performed by the WAC for the draft recommendations on a number of issues that will be considered by the 2019 World Radiocommunication Conference (WRC-19).

[1] *See* FCC Public Notice, *International Bureau Seeks Comment on Recommendations Approved by World Radiocommunication Conference Advisory Committee*, https://docs.fcc.gov/public/attachments/DA-19-172A1.pdf.

Ericsson is currently manufacturing 5G radios in the U.S. and is boosting its U.S. investments in R&D.[2] Ericsson is also active in the deployment of 5G networks[3] in some of the bands currently considered in some of these draft WAC recommendations. Ericsson opposes proposals for the introduction of additional services or changes to the regulatory environment that conflict with bands identified by Agenda Item ("AI 1.13") or that do not align with U.S. priorities. Not only is this important in the establishment of a stable environment for 5G innovation and leadership, but also avoids undermining U.S. messages to the international community.

Ericsson offers the following comments to address specific WAC recommendations:

1. **WAC/082.** Ericsson supports View A on the identification of frequency bands for the future development of International Mobile Telecommunications (IMT) in the frequency range 43.5 – 47.2 GHz. This frequency range is adjacent to the 47.2 – 48.2 GHz band that the Commission has already made available for 5G in the United States. The studies that have been submitted to ITU have shown that sharing is possible. In addition, identification of frequencies in the range 43.5 – 47.2 GHz for IMT could play an important role in establishing a global eco-system that would benefit the Commission's decision on 47.2 – 48.2 GHz.

2. **WAC/083.** Ericsson supports View A on the identification of frequency bands for the future development of IMT in the frequency range 50.4 – 52.6 GHz. The studies that have been submitted to ITU have shown that sharing is possible between IMT and Fixed Satellite Service (FSS). Radio Regulations No. 5.340.1 stipulates that passive services in

[2] *See* Press Release, Ericsson, *Ericsson increasing US investments to support accelerated 5G deployments* (Aug. 10, 2018), https://www.ericsson.com/en/press-releases/2018/8/ericsson-increasing-us-investments-to-support-accelerated-5g-deployments.

[3] *See* Ericsson Publicly announced 5G contracts, https://www.ericsson.com/en/5g/5g-networks/5g-contracts.

the bands 50.2 – 50.4 GHz and 52.6 – 54.25 GHz bands should not impose undue constraints to primary allocated services in the 50.4 – 52.6 GHz band. The identification of frequencies in the range 50.4 – 52.6 GHz for IMT could play an important role in establishing a global eco-system.

3. **WAC/088**. Resolution 162 (WRC-15) resolves to invite the ITU-R to conduct sharing and compatibility studies of existing services to determine the suitability of new primary allocations to the FSS in the frequency band 51.4 – 52.4 GHz (Earth-to-space) limited to FSS gateway links for geostationary orbit use. According to these AI 9.1.1 studies with IMT-2020 in the same frequency band, the stated required separation distances between FSS earth stations and IMT base stations and IMT user equipment are 260 and 330 meters, respectively. These studies considered FSS earth stations as small as 4.5 meters. Assuming these separation distances, and the FSS deployments are limited to a few GSO earth stations (ES), sharing existing services with mobile service should not be an issue as long as FSS ES are placed in rural environments. It is expected that there will be a very limited number of cases where sharing between IMT and FSS would cause some issues.

4. **WAC/089**. According to Article 1.22 of the Radio Regulations, the definition of FSS includes, in some cases, satellite-to-satellite links. The WAC/089 document states that these special cases are not elaborated in either the Radio Regulations or associated ITU publications. In Ericsson's view, use of FSS bands for inter-satellite service ("ISS") should require studies in each intended band because the sharing scenario is likely to differ as the orbital characteristics of the linked satellites vary. Therefore, modifying the FSS definition or simply adding an ISS designation in FSS bands, is likely not possible given the variance in orbital characteristics. It is imperative to ensure that licensed services are protected and that any introduction of new services should not impact current or planned deployments by licensed services. Ericsson is especially concerned that these frequency bands 27.5 – 28.35 GHz, 47.2 – 50.2 GHz, and 50.4 – 51.4 GHz frequency bands are identified for study because these bands overlap decisions made in the

Spectrum Frontiers docket or are under consideration by the Commission.

5. **WAC/090**. Ericsson is opposed to a future WRC agenda item that would consider the 37.5-39.5 GHz frequency band for reverse FSS duplex direction operations for gateway earth stations. In the Spectrum Frontiers proceeding, the Commission found this frequency range especially promising, as 1.6 GHz of contiguous spectrum are available in the 37-39 GHz range. Such a large block of spectrum could support ultra-high data rates. This frequency range has a global co-primary fixed and mobile allocation, which could enable operators to achieve economies of scale. And because of the global nature of the band, it is expected that this band will be identified as a priority tuning range for IMT2020. Commenters in the Spectrum Frontiers proceeding acknowledged that the space-to-Earth nature of satellite operations in the 37.5-40 GHz bands will require protecting earth stations from interfering signals from terrestrial operations (as opposed to Earth-to-space operations, which would require protection for terrestrial operations from satellite operations). In the U.S., there are already investments in the development of solutions for these frequency ranges based on decisions made by the Commission in the Spectrum Frontiers docket. Changing the FSS duplex direction or framework for co-existence could impact 5G developments in the U.S. and decisions made by other administrations at the WRC on suitability of these frequencies for IMT2020.

6. **WAC/093**. WAC/093 proposes to carry out technical sharing studies between all types of earth stations in motion ("ESIM") communicating with NGSO FSS systems with other primary services in the frequency bands 17.7-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (Earth-to-space), 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space), in order to develop appropriate technical and regulatory requirements. In Ericsson's view it is imperative to ensure that licensed services are protected and that any introduction of new services/applications in the band not impact current or planned deployments of 5G in these bands. Specifically, Ericsson is concerned with some of the frequency bands identified for study that overlap with bands identified by the Commission in the Spectrum Frontiers docket for Upper Microwave Flexible Use Service (UMFUS). We are also

concerned with proposals for bands that are currently being considered for flexible use, as the introduction of ESIMs in these bands could impact the technical rules necessary for the introduction of IMT. The GSA has performed a study[4] that provides an analysis of potential interference from ESIMs operating in the frequency range 28.35-28.6 GHz, into mobile service stations (base stations and user equipment) operating in adjacent frequency bands for a variety of ESIM and mobile system deployment scenarios. It focuses on coexistence scenarios where ESIM could potentially produce a considerable amount of interference into mobile service stations. The conclusion of the study is that land-based operations using ESIM in proximity to mobile service stations and pointing at each other is a problem, even from an adjacent channel perspective. It is not immediately clear that there is a non-burdensome coordination method for resolving the harmful interference issues between land-based ESIMs and terrestrial mobile, even when considering scenarios where the ESIM is on an adjacent channel. Therefore, Ericsson is opposed to the introduction of ESIMs in the frequency bands, either decided or pending, in the Spectrum Frontiers docket in this WAC recommendation.

7. **WAC/094**. The rising demand for mobile broadband has created increased capacity requirements in the backhaul or transport network. The 71–76 GHz and 81–86 GHz frequency ranges are important for the provision of Fixed Service (FS) backhaul for mobile broadband services. These frequency ranges offer very wide bandwidth, enabling capacities on the order of 10 Gigabits per second or more over distances of a few kilometers and represent an alternative to fiber deployment: this data rate cannot be achieved in other frequency bands that are bandwidth-limited. Therefore, Ericsson does not support the proposal for studies of technical and operational issues and regulatory provisions for the operation of NGSO FSS satellite systems in the frequency bands 71-76

[4] *See* Compatibility between Earth Stations in Motion Operating in the Frequency Range 28.35-28.6 GHz and Stations in the Mobile Service Operating in Adjacent Frequency Bands, Reply Comments of Global Mobile Suppliers Association, https://ecfsapi.fcc.gov/file/10830940623166/Compatibility%20between%20ESIM%20and%20MS%202017-08-30.pdf

GHz (space-to-Earth, and possible reverse-band operation in the Earth-to-space direction) and 81-86 GHz (Earth-to-space) (limited to gateway links only).

Respectfully submitted,

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